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December 19, 2014

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Room TW-B204
Washington, DC 20554

Re: ET Docket No. 13-49; EX PARTE

Dear Ms. Dortch:

This is to inform you that on Wednesday, December 17, 2014, Ed Bradley, Hilary Cain, John Kenney, and Kevin Ro of Toyota, and the undersigned (collectively, the "Toyota Representatives"), met with Commissioner Michael O'Rielly, chief of staff Robin Colwell, and wireless legal advisor, Erin McGrath. In this meeting, the Toyota Representatives briefed Commissioner O'Rielly on Toyota's active deployment of DSRC systems and the planned rollout in Japan of advanced vehicle-infrastructure cooperative systems in new vehicle models next year. The Toyota Representatives explained that these systems will use dedicated ITS frequencies for road-to-vehicle and vehicle-to-vehicle communication, and that Toyota will be in a position to promptly deploy similar systems in the United States once the current uncertainty regarding the operation of DSRC systems at 5 GHz is resolved. The Toyota Representatives left the attached materials with the Commissioner and his staff.

Please contact the undersigned should you have any questions.

Very truly yours,

- /s/ -

James H. Barker

Counsel for Toyota

Nov. 26, 2014

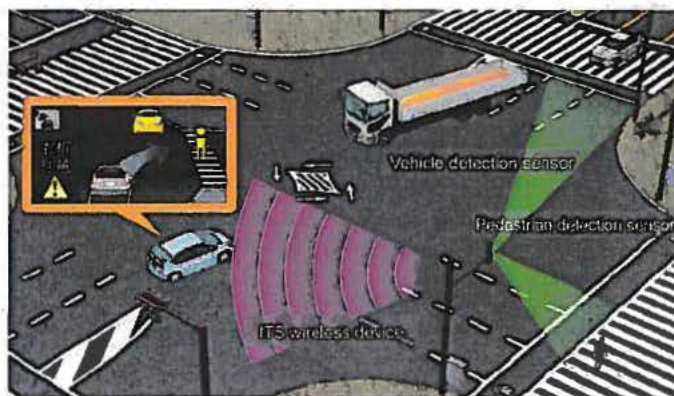


Toyota to Bring Vehicle-Infrastructure Cooperative Systems to New Models in 2015

Toyota City, Japan, November 26, 2014 - Starting next year, some of Toyota Motor Corporation's new models will be compatible with advanced vehicle-infrastructure cooperative systems that use a wireless frequency reserved for Intelligent Transport Systems (ITS). This compatibility will be offered as an option for the "Toyota Safety Sense P" active safety package that will be made available in 2015 on select new models sold in Japan.

The systems will use the dedicated ITS frequency of 760 MHz for road-to-vehicle and vehicle-to-vehicle communication to gather information that cannot be obtained by onboard sensors. At intersections with poor visibility, information about oncoming vehicles and pedestrians detected by sensors above the road will be conveyed via road-to-vehicle communication, and information about approaching vehicles will be conveyed via vehicle-to-vehicle communication, with audio and visual alerts warning drivers when necessary.

In addition, Toyota's newly-developed Communicating Radar Cruise Control feature allows preceding and following vehicles to maintain safe distances between one another on highways.



Right-turn Collision Caution
(using road-to-vehicle communication)



Communicating Radar Cruise Control
(using vehicle-to-vehicle communication)

Communicating Radar Cruise Control uses Toyota's existing forward-facing millimeter-wave radar to detect inter-vehicular distances and relative speeds. The addition of acceleration and deceleration information from preceding vehicles (obtained via vehicle-to-vehicle communication) significantly enhances tracking performance. In addition to making highway driving safer, this helps reduce traffic congestion and enables more fuel-efficient driving.

Toyota develops ITS-compatible interfaces in collaboration with government ministries and agencies and private companies, with the aim of launching them as soon as practically possible. In 2013, Toyota participated in the ITS Green Safety public-private collaborative demonstration project to assess the social effects of such systems. Going forward, Toyota will participate in the ITS Connect Promotion Consortium* to support the development of environments for the smooth introduction of such systems and their widespread adoption.

Toyota believes that the ultimate goal of a society that values mobility is to eliminate traffic fatalities and injuries. Toyota's Integrated Safety Management Concept sets the direction for safety technology development and vehicle development, and covers all aspects of driving by integrating individual vehicle safety technologies and systems rather than viewing them as independently functioning units. This approach is reflected in R&D focusing on safety devices and systems.

Toyota is firmly committed to a wide range of initiatives addressing traffic safety, ranging from the development of ever-safer vehicles and technologies to helping create a safe traffic environment and engaging in educational activities.

*Established in October 2014 to encourage the practical application of, and operational support for, driving support system infrastructure and technology using dedicated ITS communications frequencies



Signal Change Advisory

Red Light Caution

Communicating Radar Cruise Control

Downloads (PDF)



**Vehicle-infrastructure
Cooperative Systems Using
Dedicated ITS
Communications Bandwidth**

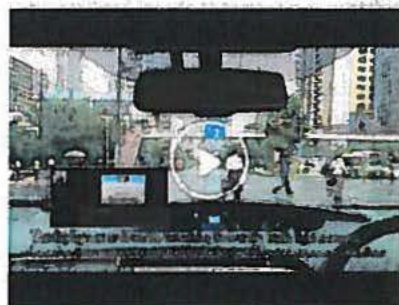
Downloads (Videos)



Right-turn Collision Caution



**Emergency Vehicle
Notification**



Signal Change Advisory



Downloads (Images)



**Right-turn Collision Caution
(using road-to-vehicle
communication)**



**Communicating Radar Cruise
Control (using vehicle-to-
vehicle communication)**



Automotive News

Toyota: Active safety for all

Company to roll out systems for volume vehicles starting in '15

Hans Greimel  

Automotive News | December 1, 2014 - 12:01 am EST

TOKYO — Toyota Motor Corp. will step closer to autonomous vehicles when it begins rolling out a range of advanced active safety systems across its mass-market lineup in early 2015.

The new or re-engineered technologies encompass more sophisticated precrash braking packages, an improved auto-parking feature, a next-generation auto-adjust headlamp and a vehicle-to-infrastructure and vehicle-to-vehicle communication system.

The auto-parking and vehicle-to-vehicle communication systems will debut in Japan and migrate to other markets, including the U.S. Other technologies, including two new precrash braking packages, will be released in the U.S. as early as next year.



Yoshida: Swift improvements

Pricing wasn't disclosed, but the goal is to introduce affordable technologies in mass-volume nameplates, said Moritaka Yoshida, Toyota's chief safety technology officer.

He said automakers have reached a point of diminishing returns from improvements in passive systems such as seat belts. Faster gains will come from technologies that prevent crashes in the first place, he said.

"There is a limit to reducing the number of fatalities through passive safety," Yoshida said. "We must also focus on active safety."

Precrash packages

The two precrash safety packages are dubbed the Toyota Safety Sense C, for compact cars, and the Toyota Safety Sense P, for midsize and high-end vehicles. In Japan, C will debut next spring and P next summer.

By 2017, both will be in use in most passenger-car nameplates and trim levels in the U.S., Europe and Japan, Toyota said, without saying which nameplates would be first.

The systems will deliver better performance than active safety systems used in such premium models as the Lexus LS, but at roughly the same cost, Yoshida promised. Toyota expects to lower costs in part by using common parts across multiple high-volume vehicles.

"When it comes to improvement in this area, it is moving very fast," Yoshida said.

Toyota Safety Sense C, the precrash system for small cars, can automatically stop a car traveling at 19 mph before impact, and operates up to 50 mph. So at 50 mph, it can slow a car by 19 mph, dropping the speed at impact to 31 mph and thus softening a crash.

Toyota Safety Sense P, the precrash system for bigger vehicles, can stop a car going 25 mph before impact with another vehicle, or trim 25 mph off higher speeds before a crash. Unlike Toyota Safety Sense C, it can detect pedestrians and avoid striking them at speeds up to 19 mph.

Toyota's new auto-parking technology also launches next year. It builds on the company's Intelligence Clearance Sonar system, which is available outside Japan only in the Lexus NX. It enables self-parking in a wider range of difficult-to-park spaces.

See-through View

It also uses a new approach, called "See-through View," that improves visibility of the vehicle's blind spots. Toyota's existing Panoramic View Monitor gives an overhead view from outside the car. See-through View gives a view from the driver's seat as if the vehicle itself were transparent, providing a more intuitive picture of potential hazards.

Toyota's next-generation adaptive high-beam headlamp uses multiple independently controlled light-emitting diodes. The LEDs can be better controlled for more focused and nuanced illumination, without blinding oncoming drivers or pedestrians. Light is distributed based on the operation of the steering wheel.

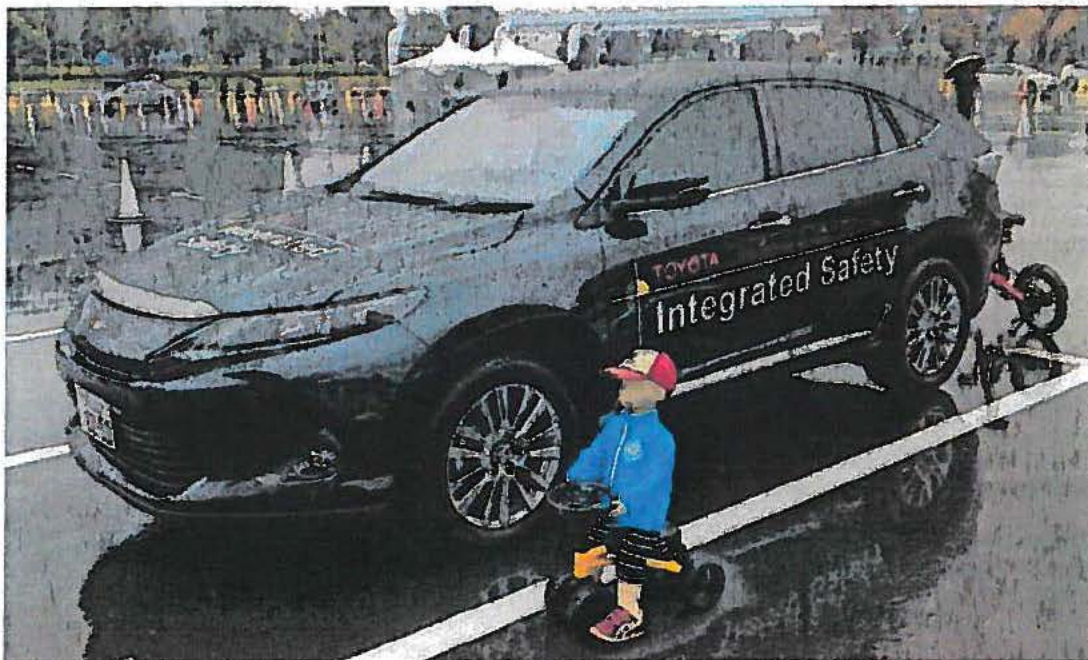
Toyota's current adaptive high-beam system uses only two light sources per headlamp. The new one uses 11 LEDs on each side.

Toyota said it will be among the first carmakers to use vehicle-to-infrastructure and vehicle-to-vehicle communication systems in its cars, also starting next year.

These technologies, while still in their infancy, are viewed as enablers of autonomous cars. For example, they allow vehicles to talk to stationary intelligent transportation system sensors at intersections, which warn of pedestrians and vehicles hidden by blind spots.

These technologies will deploy first in Japan, where the government and auto industry have agreed on standardization of such items as the dedicated wireless bandwidth: 760 megahertz. A U.S. introduction date will depend on similar moves by U.S. regulators and carmakers, Toyota said.

"These kinds of safety technologies are effective only when in wide use," Yoshida said. "So we are taking the first step."



As if the vehicle were transparent: One new technology improves drivers' ability to spot hazards.

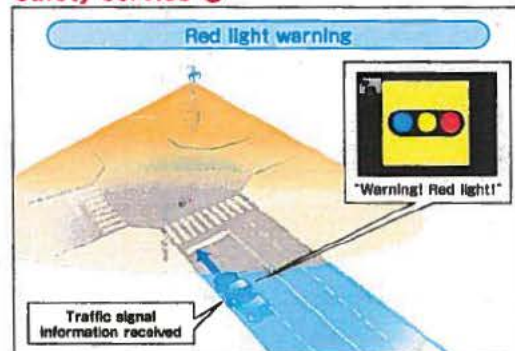
Photo credit: HANS GREIMEL

Safety service ①



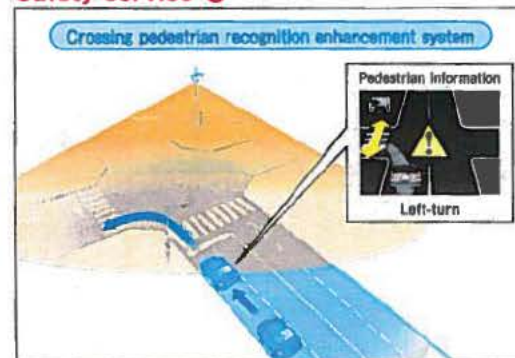
When the driver is waiting for a chance to make right turn at the intersection, the OBU receives sensor data from the facility. If the sensor recognizes the existence of the oncoming vehicle or crossing pedestrian, the OBU alerts the driver according to the received data.

Safety service ②



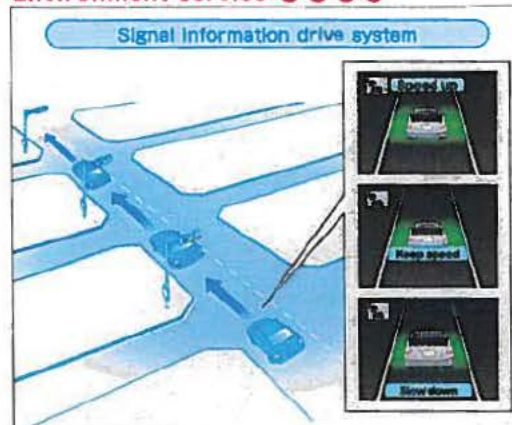
The OBU alerts the driver if the vehicle does not decelerate in spite of the red signal.

Safety service ③



When the driver makes left turn at the intersection, the OBU receives sensor data from the facility. If the sensor recognizes the existence of the crossing pedestrian, the OBU alerts the driver according to the received data.

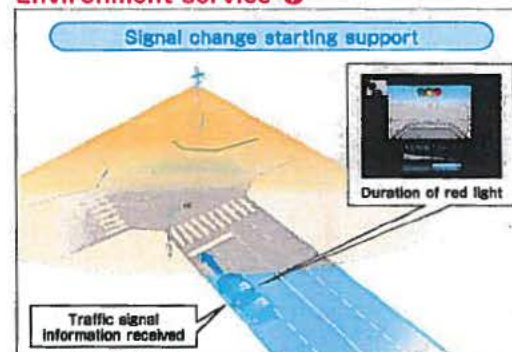
Environment service ④⑤⑥⑧



When OBU receives the traffic signal data from the signals ahead on the route, OBU estimates the possibility of passing through the next intersection.

If it is possible, the OBU recommends the driver to accelerate within the speed limit or to decelerate in order to pass through. Otherwise, the OBU recommends the driver to release the accelerator for fuel saving.

Environment service ⑦



While the vehicle is stopping on the red light, the OBU receives the planned traffic signal cycle data from the road-side facility and indicates the remaining time to the green light. By this information, the driver would be ready to start the vehicle without delay.

OBU : On Board Unit



20th
ITS WORLD CONGRESS
TOKYO 2013

Aichi/Toyota ITS & Samurai Tour
Demonstration of the Driving Safety Support Systems



TOYOTA

DSSS (Driving Safety Support Systems) demonstration

- ① Right-Turn collision prevention system
Crossing pedestrian recognition enhancement system
- ② Red light warning
- ③ Crossing pedestrian recognition enhancement system (Left-turn)
- ④ Signal information drive (deceleration)
- ⑤ Signal information drive (keep speed)
- ⑥ Signal information drive (release the accelerator)
- ⑦ Signal change starting support
- ⑧ Signal information drive (acceleration)

